



# Yield of strawberry "F1-hybrid" true seed grown in soilless culture under Riyadh condition

Mohamed Ewis, Qaryouti M, Osman M, W. Voogt, J.B. Campen, H. van der Heide, I. Tsafaras, M. Qaryouti and F. de Zwart, Al-Soqeer, A.A

## Background

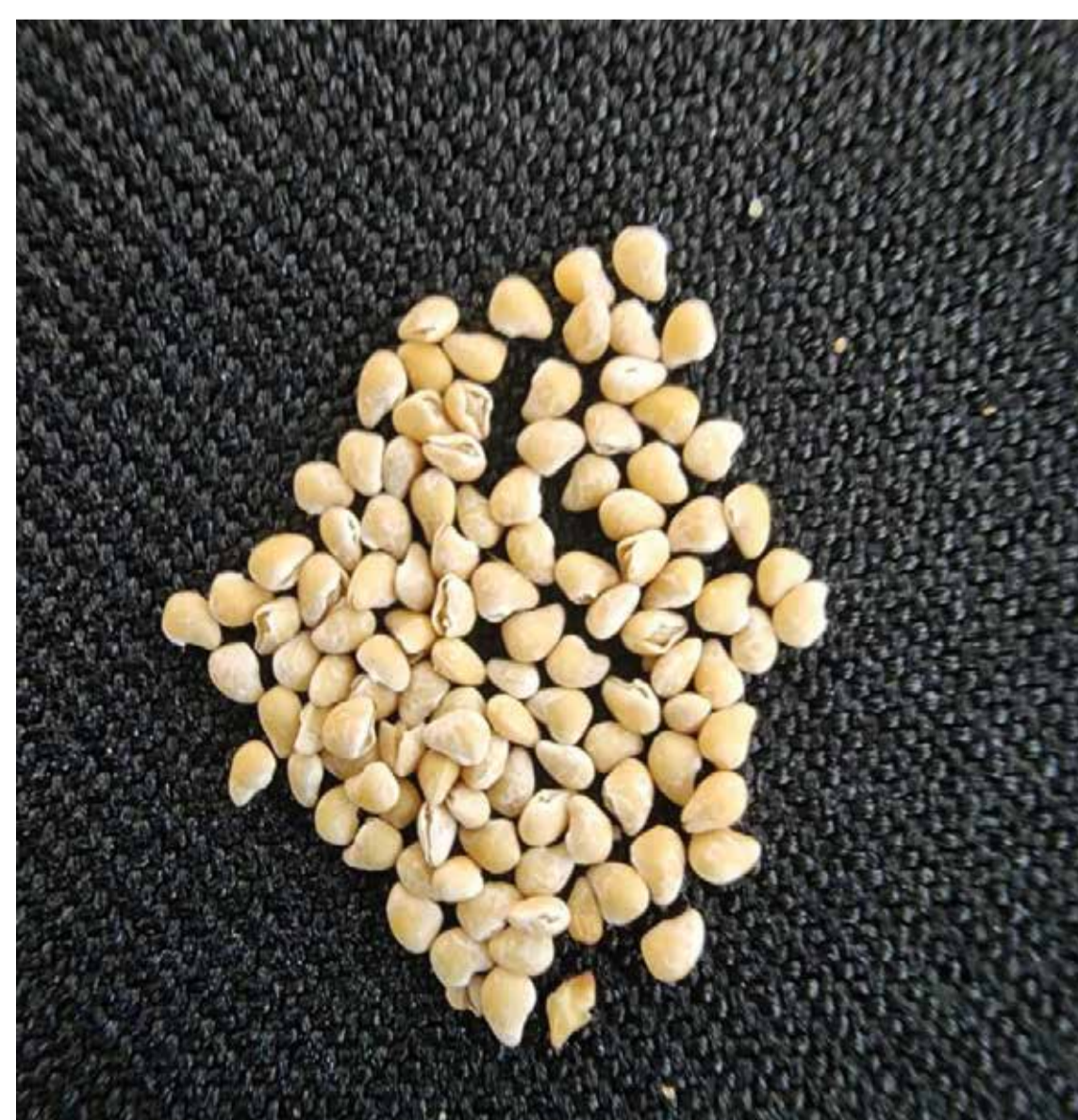
The cultivated strawberry (*Fragaria x ananassa Duch.*) has a wide geographic distribution that demonstrates the broad adaptation of the species to different growing conditions. Commonly, strawberry propagates vegetatively by runners that perform new complete plant. This technique is time consuming and non-cost effective. Thus, strawberry breeding programs, through several breeding companies, announced the progress in producing F-1hybrid strawberry seeds for local market.

## Objective

This work aims to evaluate growth performance and yield component of selected strawberry F-1hybrid that can be adopted for greenhouse producers in KSA in comparison to the common two varieties "Festival and Sweet Charli", to support growers for the conversion of soil to soilless system. In addition, the success of increasing yield and prolong harvest season for greenhouse sector, shall increase income of investors and could be considered as a sustainable tool that reducing water and fertilizers required for seedling propagation and labor cost.

## Methods

- Seeds of F1-hybrid strawberry (*Fragaria x ananassa Duch.*), Estavana were sown in trays filled with potting soil for germination. Seedlings of Estavana and the most common two strawberry cultivars "Festival and Sweet Charli", (propagated by runners) at 3 true leaves stages, were set in a Venlo type glasshouse (40 m × 12 m), covered with tempered diffuse glass, of the national research and development center for sustainable agriculture (Estidamah), Riyadh, KSA.
- Plants were grown in Dutch buckets filled with sand (8 kg each) from 5th of October 2021, arranged on 8 gutters, 34 m length and 6.5 m height with 2.5 m plant distance. The greenhouse is equipped with rail pipe heating system, high pressure fogging system (0.4 L m<sup>2</sup>. h<sup>-1</sup>), shading screen (50% shading percentage) and a pad and fan system consisting of a plastic pad wall (12 m × 3 m × 15 cm) and 6 frequency-controlled fans with capacity of 15,000 m<sup>3</sup>. h<sup>-1</sup> each (Tsafaras 2021).
- Six weeks post transplanting, good quality and strawberry fruits were regularly harvested for yield components measurement.



**F1 – hybrid  
Estavana Seeds**



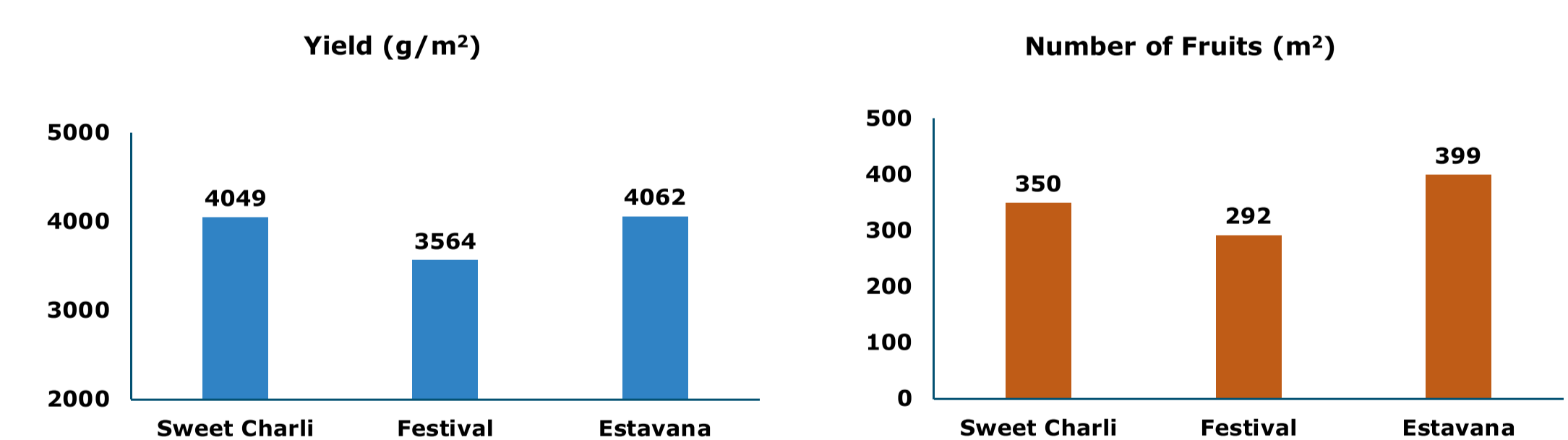
**Estavana  
Seed sowing**



**F1-hybrid "Estavana"  
germination (10 -15 days)**



**Seedlings  
(60 -75 days)**



**Figure 1. The overall production and number of fruits per m<sup>2</sup> for the three cultivars grown in Dutch bucket.**

## Concluion

- F-1hybrid Estavana successfully grown under Riadh greenhouse condition
- Yield of all three cultivars were markedly higher than local growers, less than 1000g per m<sup>2</sup>, which indicates the capability of Estidamah technology to improve the production of strawberry in KSA.
- F-1hybrid Estavana showed the potential to be replaced by both vegetatively propagated cultivars "Festival and Sweet Charli"
- Several F-1hybrid need to be evaluated to perform a clear benchmark and test different fruit quality for consumer behavior.

